

## John B. Greer

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### CONTACT INFORMATION

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### RESEARCH INTERESTS

Partial differential equations, analysis, numerical analysis, applied mathematics, image processing.

### EDUCATION

**Duke University**, Durham, North Carolina

Ph.D., Mathematics, December 2003

- Dissertation Topic: “Fourth-order diffusions in image processing.”
- Advisor: Andrea L. Bertozzi (*now at UCLA*)

M.A., Mathematics, May 2001

**Columbia University**, New York, New York USA

B.A., Mathematics, May, 1999

### HONORS AND AWARDS

National Science Foundation Postdoctoral Fellowship, 2004 - present.

### AFFILIATIONS

**Courant Institute**, New York, New York  
Courant Instructor

**September, 2004 - present**

**University of California**, Los Angeles, California  
Research Assistant

**January - August, 2004**

**Los Alamos National Lab**, Los Alamos, New Mexico  
Student

**June - August, 2003**

### PUBLICATIONS

J. B. Greer. An improvement of a recent Eulerian method for solving PDEs on general geometries. To appear in *J. Sci. Comput.*, 32 pages. Published online December 2005.

J. B. Greer, A. L. Bertozzi, and G. Sapiro. Fourth order partial differential equations on general geometries. *J. Comput. Phys.*, 216(1):216–246, 2006.

A. L. Bertozzi, J. B. Greer, S. Osher, and K. Vixie. Nonlinear regularizations of TV based PDEs for image processing. In *Nonlinear partial differential equations and related analysis*, volume 371 of *Contemp. Math.*, pages 29–40. Amer. Math. Soc., Providence, RI, 2005.

A. L. Bertozzi and John B. Greer. Low-curvature image simplifiers: global regularity of smooth solutions and Laplacian limiting schemes. *Comm. Pure Appl. Math.*, 57(6):764–790, 2004.

J. B. Greer and A. L. Bertozzi. Traveling wave solutions of fourth order PDEs for image processing. *SIAM J. Math. Anal.*, 36(1):38–68 (electronic), 2004.

J. B. Greer and A. L. Bertozzi.  $H^1$  solutions of a class of fourth order nonlinear equations for image processing. *Discrete Contin. Dyn. Syst.*, 10(1-2):349–366, 2004. Partial differential equations and

applications.

SUBMITTED  
PAPER

S. Esedođlu and J. B. Greer. Upper bounds on the coarsening rate of discrete, ill-posed nonlinear diffusion equations. Submitted for publication in September 2006.

TEACHING  
EXPERIENCE

**New York University**, New York, New York

*Applied Mathematics I*

**Fall 2006**

Graduate level course on asymptotic and perturbation methods.

*Math Patterns in Nature*

**Spring 2006**

Undergraduate course covering topics including exponential growth and decay, basic probability, and trigonometry.

*Calculus I*

**Fall 2005**

**Duke University**, Durham, North Carolina

*Intermediate Calculus*

**Spring 2003**

Multivariate calculus.

*Laboratory Calculus I and II*

**Fall 1999 - Spring 2000**

INVITED TALKS

**2006:** Courant Institute Analysis Seminar. Interlochen Arts Academy guest lecturer on “Mathematics in Image Processing.”

**2005:** Courant Institute Applied Math Seminar. Foundations of Computational Mathematics, Image and signal processing workshop. AMA Northeast Meeting at Bard College. ONR Workshop on Automation of Analysis Model Creation.

**2004:** University of Maryland Analysis Seminar. University of Minnesota PDE Seminar. Los Alamos National Lab CNLS Seminar. Courant Institute Analysis Seminar. Workshop on Mathematical Image Analysis and Processing, Banff International Research Station. AMS Northeastern Meeting, Pittsburgh.

POSTERS

*Computing fourth-order PDEs on implicit surfaces.* IPAM Workshop on Thin Films and Fluid Interfaces. February, 2006.

*Bifurcations of traveling waves in image processing.* Workshop on image analysis and understanding data from scientific experiments. Los Alamos National Laboratory. December 2002.

OTHER INTERESTS

Whitewater kayaking. Piano.